

NEBRASKA ADMINISTRATIVE CODE

Title 428 - BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 - Procedures for Standards

<u>Contents</u>	<u>Section</u>	<u>Page</u>
Table of Contents	—	1
Minimum Design Standards	001	3
MINIMUM DESIGN STANDARDS -- PART ONE STATE HIGHWAY SYSTEM		
Minimum Design Standards - Rural (Adopted October 26, 2001)		
New and Reconstructed Rural State Highways	001.01	5
New and Reconstructed Bridges on Rural State Highways	001.02	6
Resurfacing, Restoration and Rehabilitation (3R) Projects on		
Non-Interstate Rural State Highways	001.03	7
Scenic - Recreation - Rural State Highways	001.04	8
 <u>Typical Cross Section of Improvement for New and Reconstructed State Highways</u> (<u>Adopted _____</u>) <u>Interstate Interchange</u> Ramp	 001.05	 9
Typical Cross Sections of Improvements for New and Reconstructed Rural State Highways (Adopted October 26, 2001)		
Design Number DR1 (Crowned)	001.06	10
Design Number DR1 (Tangent)	001.06A	
Design Number DR2 (Crowned)	001.07	11
Design Number DR2 (Tangent)	001.07A	
Design Number DR3	001.08	12
Design Number DR4	001.09	13
Design Number DR5	001.10	14
Design Number DR6	001.11	15
Minimum Design Standards - Municipal (Adopted October 26, 2001)		
New and Reconstructed Municipal State Highways	001.12	16
New and Reconstructed Bridges on Municipal State Highways	001.13	17
Resurfacing, Restoration and Rehabilitation (3R) Projects on		
Non-Interstate Municipal State Highways	001.14	18

Contents

Section Page

MINIMUM DESIGN STANDARDS -- PART TWO
LOCAL ROADS AND STREETS

Minimum Design Standards (<i>Adopted October 26, 2001</i>)		
Municipal Streets	001.15	19
Rural Roads	001.16	20
Scenic - Recreation - Rural Roads	001.17	21
 Typical Cross Sections for Rural Roads (<i>Adopted October 26, 2001</i>)		
Design Number ROA1	001.18	22
Design Number ROA2, RC1, RL1	001.19	23
Design Number ROA3, RC2, RL2	001.20	24
Design Number ROA4, RC3	001.21	25
Design Number RL3	001.22	26
 * Minimum Construction Standards (<i>Adopted September 20, 1974</i>)	002	
 * Minimum Maintenance Standards (<i>Adopted September 16, 1983</i>)	003	
 * Relaxation of Standards (<i>Adopted July 19, 1985</i>)	004	
 * Relaxation of Standards for Scenic - Recreation Roads (<i>Adopted January 16, 1981</i>)	005	
 * Maintenance Standards for Minimum Maintenance Roads (<i>Adopted July 19, 1985</i>)	006	
 * Standard Compliance Inspection Procedures (<i>Adopted March 15, 1974</i>)	007	
 * Available in a separate manual, Procedures for Classifications and Standards, 1985.		

Title 428 - BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
Chapter 2 - Procedures for Standards

001 MINIMUM DESIGN STANDARDS.

Copies of the most current editions of the following documents referred to in the Standards are on file in the NDOR Central Administration Complex, 1500 Highway ~~N-2~~, Lincoln, Nebraska:

AASHTO "A Policy on Geometric Design of Highways and Streets"

AASHTO "A Policy on Design Standards — Interstate System"

NDOR "Nebraska National Highway Functional Classification" Map"

NDOR "Nebraska State Highway Functional Classification" Map"

NDOR "State Functional Classification" Maps" (Counties and Municipalities)

NDOR "Nebraska Interstate and Priority Commercial Systems" Map"

~~NDOR "28 ft Top System"~~

The following abbreviations and symbols are used in the Standards:

3R	<u>Resurfacing, Restoration and Rehabilitation</u>	km	kilometer
'	<u>foot or feet</u>	km/h	kilometers per hour
AASHTO	American Association of State Highway and Transportation Officials	Lt.	left
ADT	Average Daily Traffic	m	meter
Board	Board of Public Roads Classifications and Standards	Max.	maximum
		Min.	minimum
CL	centerline	mph	miles per hour
Deg	degree	MS13.5	Metric equivalent of HS15 loading
DHV	Design Hourly Volume	MS18	Metric equivalent of HS20 loading
Div.	divided	N/A	not applicable
FHWA	Federal Highway Administration	NDOR	Nebraska Department of Roads
ft	foot <u>or</u> feet	NHS	National Highway System
HL93	<u>AASHTO Load and Resistance Factor Design (LRFD) Bridge Design Specification</u>	ROW	Right of Way
HS15	AASHTO loading requirements for a standard HS15 truck	<u>RSAP</u>	<u>Roadside Safety Analysis Program</u>
HS20	AASHTO loading requirements for a standard HS20 truck	Rt.	right
		%	percent

The following definitions apply only to the State Highway System:

soft conversion Changing to the exact calculated metric number.

Reconstructed bridge work includes replacement of the entire superstructure.

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

MINIMUM DESIGN STANDARDS - PART ONE
STATE HIGHWAY SYSTEM

001.01 MINIMUM DESIGN STANDARDS — NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(1) Design Year Traffic	Design Number	(2) (2) State Functional Classification	(2) (3) National Functional Classification	Terrain	Maximum Grade Percent	(4) Design Speed km/h (mph)	(5) Horizontal Curve		Number of Lanes	Lane Width m (ft)	Median Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(6) (6) Lateral Obstacle Clearance and Hinge Point Distance m (ft)
							Min. Radius m	(Max. Deg.)						
N/A	DR1	Interstate	Interstate	All	Level Rolling	3% 4% 110 (68.35) 70 mph	500 1810'	(3.40)	4 Div. C	3.6 (11.81) 12'	11 (36.00) 36'	1.8 (5.91) 6' Lt. 3.6 (11.81) 12' Rt.	1.2 (3.94) 4' Lt. 3 (9.84) 10' Rt.	10.5 (34.45) 35'
750 DHV & Over N/A	DR2	Expressway or Major Arterial	Arterial	Level Rolling	3% A 4% A	110 (68.35) 100 (62.14) 65 mph	500 1480'	(3.40) (4.42)	4 Div. C	3.6 (11.81) 12'	11 (36.00) 36' E	1.5 (4.92) 5' Lt. 3 (9.84) 10' Rt.	0.9 (2.95) 3' Lt. 2.4 (7.87) 8' Rt.	9 (29.53) 30'
330—740 DHV 4,000 ADT & Over	DR3	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% A 4% A 5% A B 6.5 A 6% B	110 (68.35) 100 (62.14) 100 (62.14) 90 (56.02) 60 mph	500 1200'	(3.40) (4.42) (4.42) (5.73)	2 B D	3.6 (11.81) 12'	None	3 (9.84) 10'	2.4 (7.87) 8'	9 (29.53) 30'
1700—2000 ADT 2,000 - 3,999 ADT	DR4	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% A 4% A 5% A B 6.5 A 6% B	110 (68.35) 100 (62.14) 100 (62.14) 90 (56.02) 60 mph	500 1200'	(3.40) (4.42) (4.42) (5.73)	2	3.6 (11.81) 12'	None	2.4 (7.87) 8'	None E 2' G	9 (29.53) 30'
400—1699 ADT 400 - 1,999 ADT	DR5	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% A 4% A 5% A B 6.5 A 6% B	110 (68.35) 100 (62.14) 100 (62.14) 90 (56.02) 60 mph	500 1200'	(3.40) (4.42) (4.42) (5.73)	2	3.6 (11.81) 12'	None	1.8 (5.91) 6' F	None E G, H	7 (22.97) 23'
Under 400 ADT	DR6	Major Arterial	Arterial Arterial Collector Collector	Level Rolling Level Rolling	3% B 4% B 5.5 A 5% B 6.5 A 6% B	110 (68.35) 100 (62.14) 90 (56.02) 90 (56.02) 60 mph	500 1200'	(3.40) (4.42) (5.73) (5.73)	2	3.6 (11.81) 12'	None	1.2 (3.94) 4'	None E H	7 (22.97) 16'

Note: The Board's "Section 001.12 Minimum Design Standards - New and Reconstructed Municipal State Highways" and "Section 001.13 Minimum Design Standards - Bridges on Municipal State Highways" may be used in areas inside the municipal zoning boundaries outside the corporate limits, or in rural areas that demonstrate urban traffic characteristics.

- (1) "Design Year" shall be year of initial construction plus 20 years.
 (2) Refer to NDOR "Nebraska State Highway Functional Classification" Map.
 (3) Refer to NDOR "Nebraska National Highway Functional Classification" Map.
 (4) The design speed should be equal to or greater than the anticipated posted speed limit.
 (5) Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" $e_{max} = 8\%$.
 (6) This area, measured from the edge of the through driving lane, shall have 6:1 side slopes 4:6 or flatter which may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except: (a) Traffic signals, signal poles, railroad signals, railroad tracks, bridge rails, and non-recoverable slopes behind guardrail; (b) Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, bike/pedestrian paths, earth dikes, sloping curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts with flared end sections, erosion control devices, fire hydrants, roadway lighting, mailboxes, and traffic control devices; if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system; (c) (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost-benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.
 A Maximum grade may be one percent steeper for tangent lengths less than 500 ft.
 A Maximum grade shown may be one two percent steeper for short tangent lengths less than 500 ft. 150 m (492.13 ft).
 C Over 30,000 ADT the appropriate number of lanes will be determined by a special study.
 B D 4-lane divided allowed by Over 9,000 ADT the appropriate number of lanes will be determined by a special study. If 4 lanes are required, use DR2 standards.
 E Median widths of 16 ft are 5.4 m (17.72 ft) median width allowed at intersections and unique locations with the approval of the Director-State Engineer or his/her designee based on NDOR Traffic Division recommendation.
 D E 8 ft 2.4 m (7.87 ft) if on Priority Commercial System, refer to NDOR "Nebraska Interstate and Priority Commercial Systems" Map.
 E G 6 ft 1.8 m (5.91 ft) if on Priority Commercial System, refer to NDOR "Nebraska Interstate and Priority Commercial Systems" Map. 0.6 m (1.97 ft) if on 28' Top System, refer to NDOR "28 ft Top System Map."
 F H 9 m (29.53 ft) when posted speed is 100 km/h (60 mph) or lower. 2 ft in Sandhills, as designated in NDOR Pavement Management System.

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

Section 001.02 Standards do not apply if roadway section is curbed. See Section 001.13.

001.02 MINIMUM DESIGN STANDARDS — ~~NEW AND RECONSTRUCTED~~ BRIDGES ON RURAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(1) Design Year Traffic	Design Number	(2) State Functional Classification	(3) National Functional Classification	NEW BRIDGES			RECONSTRUCTED BRIDGES			(3) (4) RECONSTRUCTED BRIDGES OR BRIDGES TO REMAIN IN PLACE		
				Roadway Width m (ft)	(2) Design Loading	Vertical Clearance m (ft)	Roadway Width	Design Loading	Vertical Clearance	Roadway Width	Vertical Clearance m (ft)	Vertical Clearance m (ft)
Interstate <u>N/A</u>	DR1	<u>Interstate</u>	<u>Interstate</u>	12.6 (41.34) <u>42' A</u>	MS18 (HS20) <u>HL93 D</u>	5 (16.40) <u>16'</u>	<u>42'</u>	<u>HL93</u>	<u>16'</u>	<u>38'</u>	4.9 (16.08) <u>16'</u>	
750 DHV & Over <u>N/A</u>	DR2	<u>Expressway</u>	<u>Arterial</u>	11.7 (38.39) <u>39' A</u>	MS18 (HS20) <u>HL93</u>	5 (16.40) <u>16'</u>	<u>39'</u>	<u>HL93</u>	<u>16' C</u>	<u>35'</u>	4.4 (14.44) <u>16' C</u>	
330 - 740 DHV <u>4,000 ADT & Over</u>	DR3	<u>Major Arterial</u>	<u>Arterial or Collector</u>	13.2 (43.31) <u>44' B A</u>	MS18 (HS20) <u>HL93</u>	5 (16.40) <u>16'</u>	<u>44' A</u>	<u>HL93</u>	<u>14.5'</u>	<u>30'</u>	4.4 (14.44) <u>14.5'</u>	
1700 - 2999 <u>2,000 - 3,999</u> ADT	DR4	<u>Major Arterial</u>	<u>Arterial or Collector</u>	12 (39.37) <u>40' G A</u>	MS18 (HS20) <u>HL93</u>	5 (16.40) <u>16'</u>	<u>40' A</u>	<u>HL93</u>	<u>14.5'</u>	<u>28'</u>	4.4 (14.44) <u>14.5'</u>	
400 - 1699 <u>1,999</u> ADT	DR5	<u>Major Arterial</u>	<u>Arterial Collector</u>	10.8 (35.43) <u>36' B</u> <u>32' G</u>	MS18 (HS20) <u>HL93</u>	5 (16.40) <u>16'</u>	<u>36' B</u> <u>32'</u>	<u>HL93</u>	<u>14.5'</u>	<u>28'</u> <u>26'</u>	4.4 (14.44) <u>14.5'</u>	
Under 400 ADT	DR6	<u>Major Arterial</u>	<u>Arterial Collector</u>	9.6 (31.50) <u>32'</u> <u>28' G</u>	MS18 (HS20) <u>HL93</u>	5 (16.40) <u>16'</u>	<u>32'</u> <u>28'</u>	<u>HL93</u>	<u>14.5'</u>	<u>28'</u> <u>24'</u>	4.4 (14.44) <u>14.5'</u>	

Note: The Board's "Section 001.12 Minimum Design Standards - New and Reconstructed Municipal State Highways" and "Section 001.13 Minimum Design Standards - Bridges on Municipal State Highways" may be used in areas inside the municipal zoning boundaries outside the corporate limits, or in rural areas that demonstrate urban traffic characteristics.

- (1) "Design Year" shall be year of initial construction plus: (a) 20 years for new and reconstructed bridges, or (b) the expected life of the surfacing up to 20 years for bridges to remain in place.
- (2) Refer to NDOR "Nebraska State Highway Functional Classification" Map.
- (3) Refer to NDOR "Nebraska National Highway Functional Classification" Map.
- ~~(3) (4) Reconstructed bridges shall mean existing structures to be widened or remodeled.~~ Structural Capacity - A bridge can remain in place if the operating rating capacity can safely service the system for an additional 20 years of service life *(i.e. Bridge does not require load posting)*.
- ~~(2) Bridges may be allowed to remain in place if they do not vary from the required roadway width by more than 1.2 m (3.94 ft). Bridges may be allowed to remain in place if the variance from the required roadway width is more than 1.2 m (3.94 ft) with the approval of the Director State Engineer and if AASHTO Guidelines for width are met. Projects with full oversight require FHWA exception for New and Reconstructed bridges less than the required roadway width or bridges to remain in place when AASHTO guidelines for width are not met.~~
- A Divided roadways. 36 ft allowed for bridges over 200 ft in length.
- B If divided roadways, use DR2.
- G B 43.2 m (141.73 ft) 40 ft if on Priority Commercial System; 36 ft when over 200 ft in length. Refer to NDOR "Nebraska Interstate and Priority Commercial Systems" Map.
- D C MS18 (HS20) or Alternate Military Loading. 14.5 ft for non-freeway.

001.03 MINIMUM DESIGN STANDARDS — RESURFACING.RESTORATION AND REHABILITATION (3R) PROJECTS ON NON-INTERSTATE RURAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

Interstate — The standards used for horizontal alignment, vertical alignment, and widths of median, traveled way, and shoulders for projects may be the AASHTO interstate standards that were in effect at the time of the latest new and reconstructed project on the section of Interstate.

(1) Design Year Traffic	Grade Percent	(2) Horizontal Curve	Number of Lanes	Lane Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(3) Fixed Obstacle Clearance m (ft)	Stopping Sight Distance	(4) Fill Slopes	Bridges-to Remain-in-Place Roadway-Width
3000 ADT & Over <u>4,000 ADT & Over</u>	Existing	Existing	2	3.6 (11.81) <u>12'</u>	2.4 (7.87) <u>8' A</u>	1.8 (5.91) <u>6' A</u>	7.5 (24.61) <u>25'</u>	B	Existing	E
1700 - 2999 ADT <u>2,000 - 3,999 ADT</u>	Existing	Existing	2	3.6 (11.81) <u>12'</u>	1.8 (5.91) <u>6' A</u>	Existing 2' A	6 (19.69) <u>20'</u>	C	Existing	E
400 - 1699 ADT <u>750 - 1,999 ADT</u>	Existing	Existing	2	3.6 (11.81) <u>12'</u>	0.9 (2.95) <u>3' A</u>	Existing <u>A</u>	3.5 (11.48) <u>12'</u>	D	Existing	E
Under 400 <u>750</u> ADT	Existing	Existing	2	3.3 (10.83) <u>11'</u>	0.6 (1.97) <u>2'</u>	Existing	3.5 (11.48) <u>12'</u>	D	Existing	E

- (1) "Design Year" shall be year of initial construction plus ~~20 years~~ the expected life of the surfacing up to 20 years.
- (2) Horizontal curves not providing posted speed may have advisory curve and speed reduction signs.
- (3) This area, measured from the edge of the through driving lane, may have crashworthy or break-away obstacles and will shall be free of non-shielded obstacles except:
 - (a) Traffic ~~signals~~ signal poles, railroad signals, railroad tracks, bridge rails, ditches, side slopes, driveways, intersections, bike/pedestrian paths, earth dikes, ~~and~~ parallel drainage culverts; ~~(b) Other obstacles including, but not limited to sloping curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety treated culverts with flared end sections, erosion control devices, fire hydrants, roadway lighting, mailboxes, and traffic control devices; if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system;~~
 - ~~(c) (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost-benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment. For Scenic-Recreation projects, this width is the shoulder width.~~
- (4) Fill slopes shall be ~~guard-railed~~ shielded if warranted by a cost-benefit analysis.
 - A If a 4-lane divided facility exists, the minimum inside shoulder width is 3 ft ~~0.9 m (2.95 ft)~~ with 2 ft ~~0.6 m (1.97 ft)~~ surfaced.
 - B An average of one vertical curve per mile 1.5 km (0.93 mile) will be allowed below 55 mph ~~90 km/h (55.92 mph)~~ minimum AASHTO stopping sight distance, however, no sag vertical less than 40 mph ~~60 km/h (37.28 mph)~~ and or crest vertical below 45 mph ~~70 km/h (43.50 mph)~~ will be allowed.
 - C An average of two vertical curves per mile 1.5 km (0.93 mile) will be allowed below 55 mph ~~90 km/h (55.92 mph)~~ minimum AASHTO stopping sight distance, however, no sag vertical less than 35 mph ~~50 km/h (31.07 mph)~~ and or crest vertical below 40 mph ~~60 km/h (37.28 mph)~~ will be allowed.
 - D ~~60 km/h (37.28 mph)~~ 40 mph minimum AASHTO stopping sight distance for crest vertical curves and existing conditions for sag vertical curves.
 - E ~~Bridges to remain in place shall be in accordance with the Board of Public Roads Classifications and Standards "Section 001.02 Minimum Design Standards — New and Reconstructed Bridges on Rural State Highways."~~

Section 001.04 Standards ~~may be used only for approved~~ **are for use on Major Arterials also** functionally classified Scenic-Recreation-Roads.

001.04 MINIMUM DESIGN STANDARDS — SCENIC - RECREATION - RURAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For Scenic - Recreation - Internal — Minimum design standards within the scenic - recreation area shall be consistent with the established speed limits according to the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" and the topography and use of the facility.

Bridges and 3R projects refer to the Board's "Section 001.02 Minimum Design Standards - Bridges on Rural State Highways" and "Section 001.03 Minimum Design Standards - Resurfacing, Restoration and Rehabilitation (3R) Projects on Rural State Highways."

For metric units, use a soft conversion of the English unit.

(1) Design Year Traffic Major Arterial	(2) Maximum Grade Percent	Design Speed km/h (mph)	(3) Horizontal Curve Radius		Number of Lanes	Lane Width m (ft)	Median Width m (ft)	Shoulder Width m (ft)	Width of Shoulder Surfacing m (ft)	(2) (4) Lateral Obstacle Clearance		(3) Normal Design ROW Width m (ft)	Access Control
			Desirable e-max = 0.06 m (deg)	Minimum e-max = 0.08 m (deg)						Desirable m (ft)	Minimum m (ft)		
Over 750 DHV	4** (Study) 2-Minimum	110 (68.35)	560 (3.12)	500 (3.40)	(Special)	3.6 (11.81)	11 (36.00) Ultimate if required	1.8 (5.91) Lt. 3 (9.84) Rt. 3 (9.84) on 2-Lane	1.2 (3.94) Lt. 2.4 (7.87) Rt. 2.4 (7.87) on 2-Lane	0 (20.53)	3.6 (11.81)	60 (196.85) (1 Lane) 36 (118.11) (2 Lane)	In accordance with NDOR Controlled Access Policy to the State Highway System
400 - 750 DHV	4**	110 (68.35)	560 (3.12)	500 (3.40)	2	3.6 (11.81)	None	3 (9.84)	None	0 (20.53)	3.6 (11.81)	36 (118.11)	"
2,000 ADT & Over 200 - 400 DHV	4 6% **	100 (62.14) 50 mph	435 (4.04)	395 (4.02) 758'	2	3.6 (11.81) 12'	None	2.4 (7.87) 8'	None	7 (22.97)	3 (9.84) 10'	36 (118.11)	"
400 - 1,999 ADT 850 - 1,700 ADT	4.5 6% **	90 (55.92) 50 mph	335 (5.24)	305 (5.73) 758'	2	3.6 (11.81) 12'	None	1.8 (5.91) 6'	None	7 (22.97)	2.4 (7.87) 8'	30 (98.42)	"
Under 400 ADT Under 850 ADT	7% **	80 (49.71) 40 mph A	250 (6.90)	230 (7.50) 444' A	2	3.3*** (10.83) 11'	None	1.2 (3.94) 4'	None	7 (22.97)	1.8 (5.91) 6'	24 (78.74)	"

Note: The ~~2004~~ 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria.
A minimum 1.5 m (4.02 feet) flat bottom ditch may be used when environmental considerations warrant. Backslopes may be varied to fit conditions.
Minimum design policy for all classifications shall include seeding or reestablishment of vegetation of all disturbed areas.

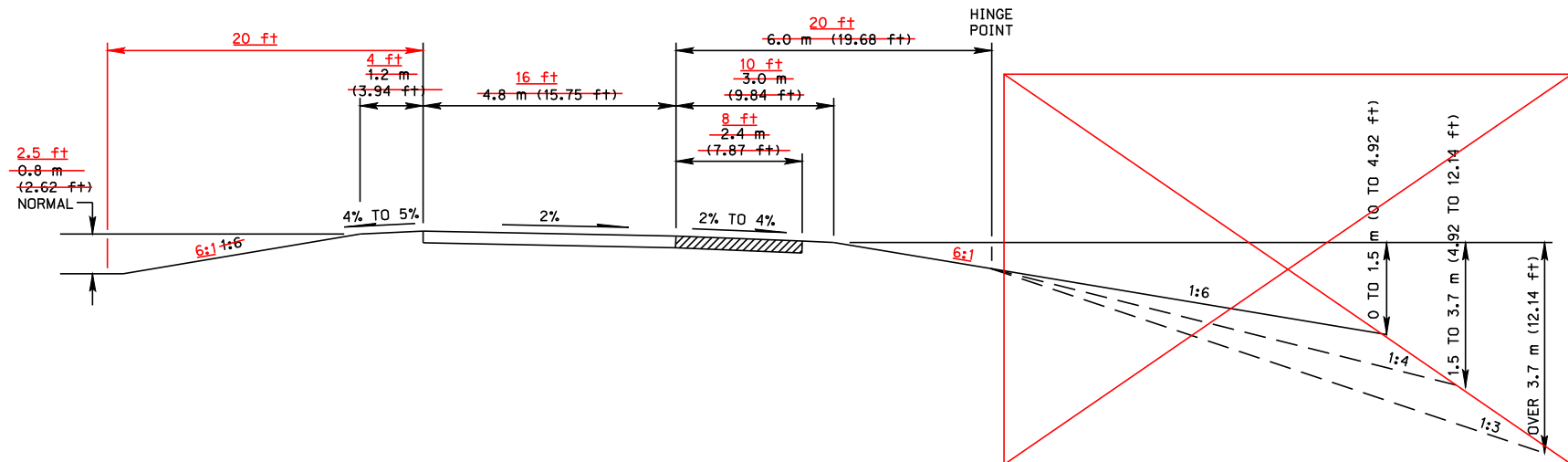
Speed limits established for these routes shall be those as determined through an engineering analysis and traffic investigation of the area by the Department of Roads.

Effort shall be made to preserve the natural environment to the extent possible without compromising the safety of those using the facility, at the speed limits that apply.

- (1) "Design Year" shall be year of initial construction plus: (a) 20 years for new and reconstructed, or (b) the expected life of the surfacing up to 20 years for 3R.
- ** (2) The maximum grades for rolling terrain may be one two percent steeper in short for tangent sections lengths less than 500 ft (150 m) (402.13 ft) in length, or and one-way downgrades. For extreme cases, at some underpass and bridge approaches, steeper grades for relatively short lengths may be considered used. (For roadways with design numbers DR5 and DR6, highway grades may be 2 percent steeper.)
- (3) Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" e max = 8%.
- (2) (4) Measured clearances are from the edge of pavement. The desirable dimensions may be reduced to the minimum lateral clearances whenever it is not feasible to meet the specified desirable lateral clearances. Traffic may be protected from obstacles with guardrail when desirable, but guardrail may be deleted if considered more hazardous than the obstacle. Signs, light standards and similar objects may be provided with breakaway bases and may then be placed inside of the minimum lateral clearance. This area, measured from the edge of the through driving lane, shall have 6:1 side slopes or flatter which may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except: (a) Traffic signal poles, railroad signals, railroad tracks, bridge rails, ditches, driveways, intersections, bike/pedestrian paths, earth dikes, curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts with flared end sections, erosion control devices, fire hydrants, and traffic control devices; (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.
- (3) Right-of-Way width should not be less than that required for all elements of the cross section and appropriate border areas.
- A Minimum design standards for speed and horizontal curve radius within the scenic - recreational area shall be consistent with the established speed limits according to the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" (if it has been reduced from 90 km/h (55.92 miles per hour) or (55 miles per hour) and the topography and use of the facility. Design may be to urban or rural standards depending upon the terrain conditions.
- * Design speed 110 km/h (68.35 mph) except in rolling terrain.
- *** 3.6 meter (11.81 feet) lane width desirable.

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
 CHAPTER 2 -- Procedures For Standards (Continued)

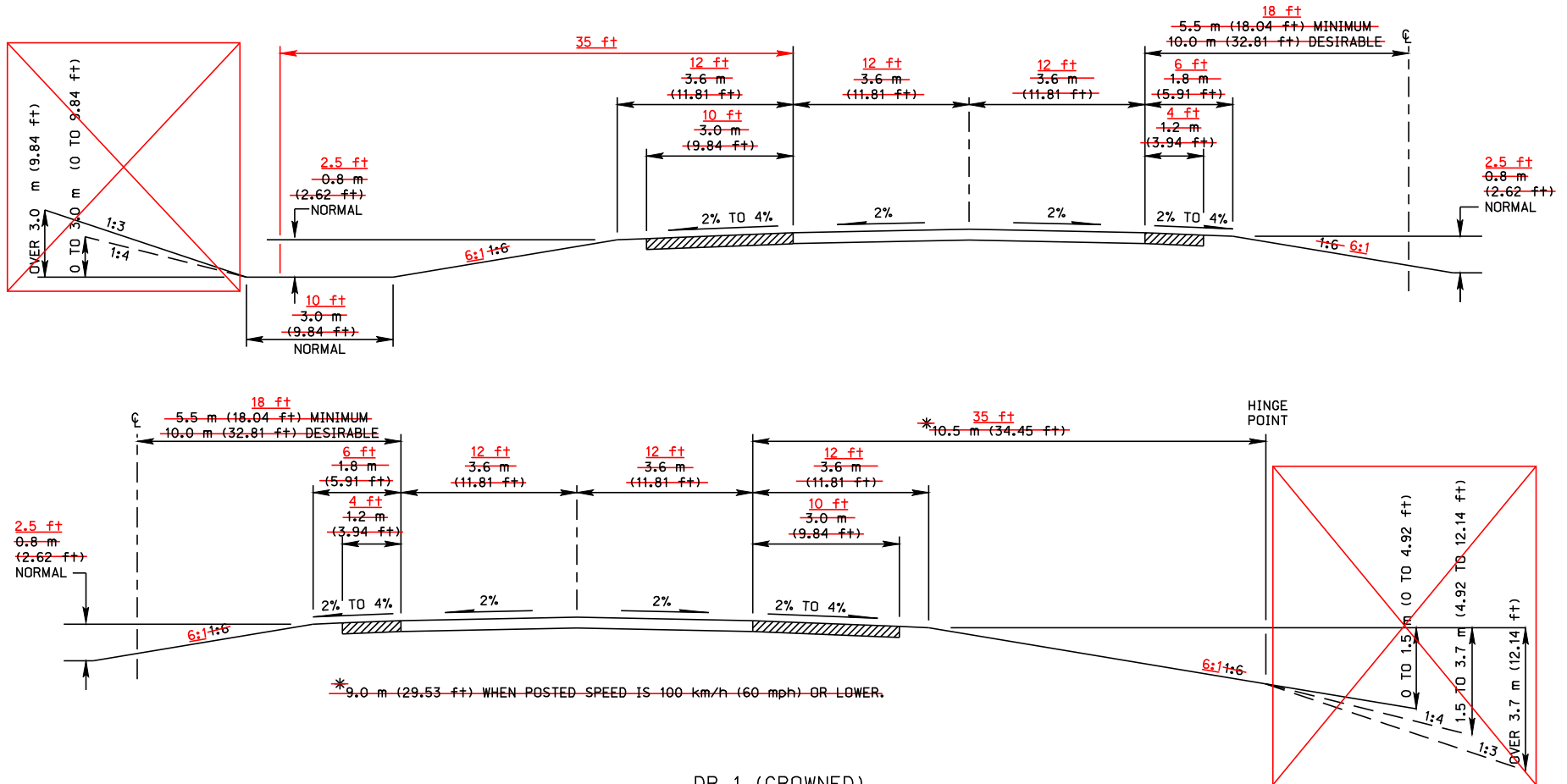
001.05 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED ~~RURAL~~ STATE HIGHWAYS : INTERSTATE INTERCHANGE RAMP



INTERSTATE INTERCHANGE RAMP

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

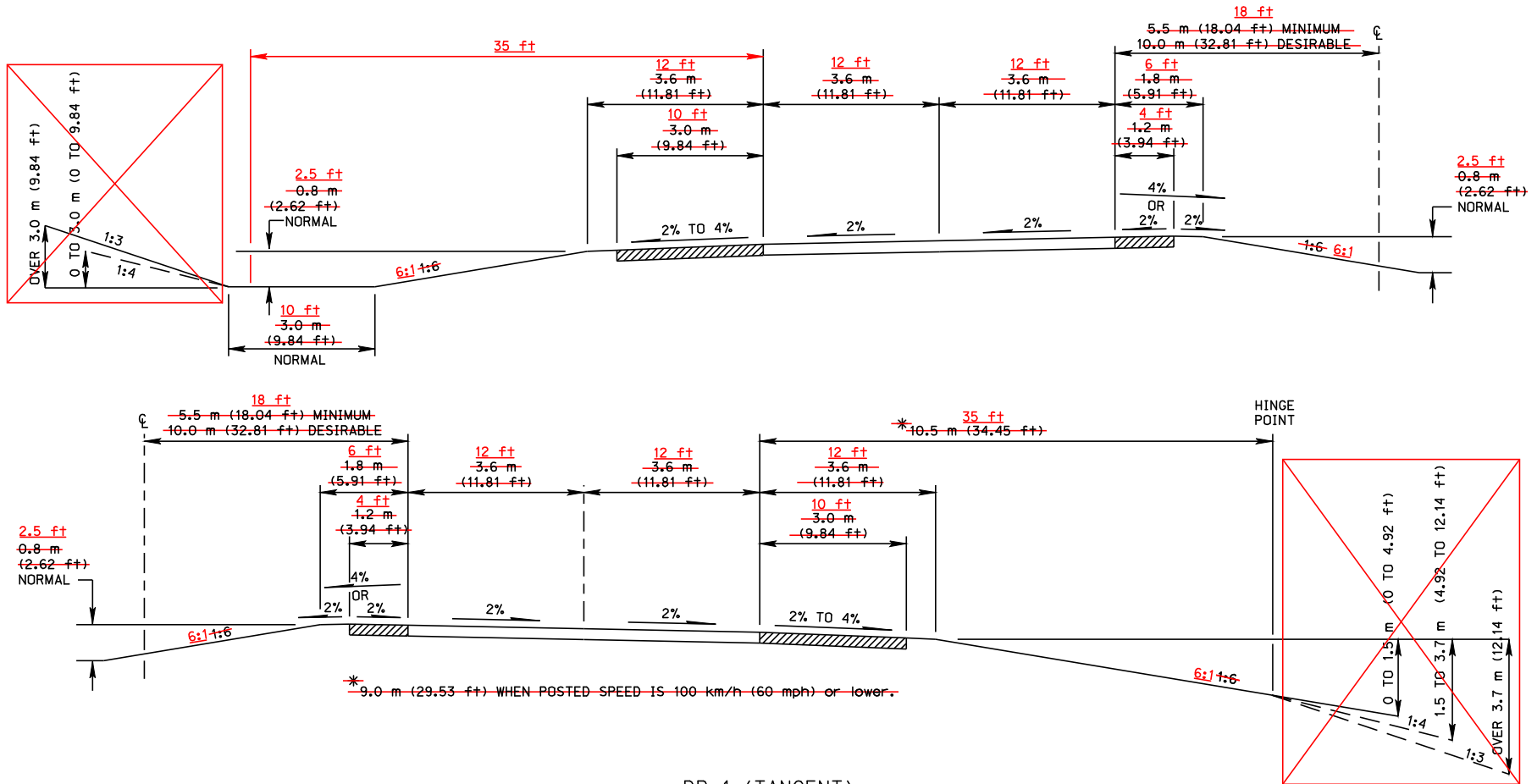
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DR 1 (CROWNED)

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

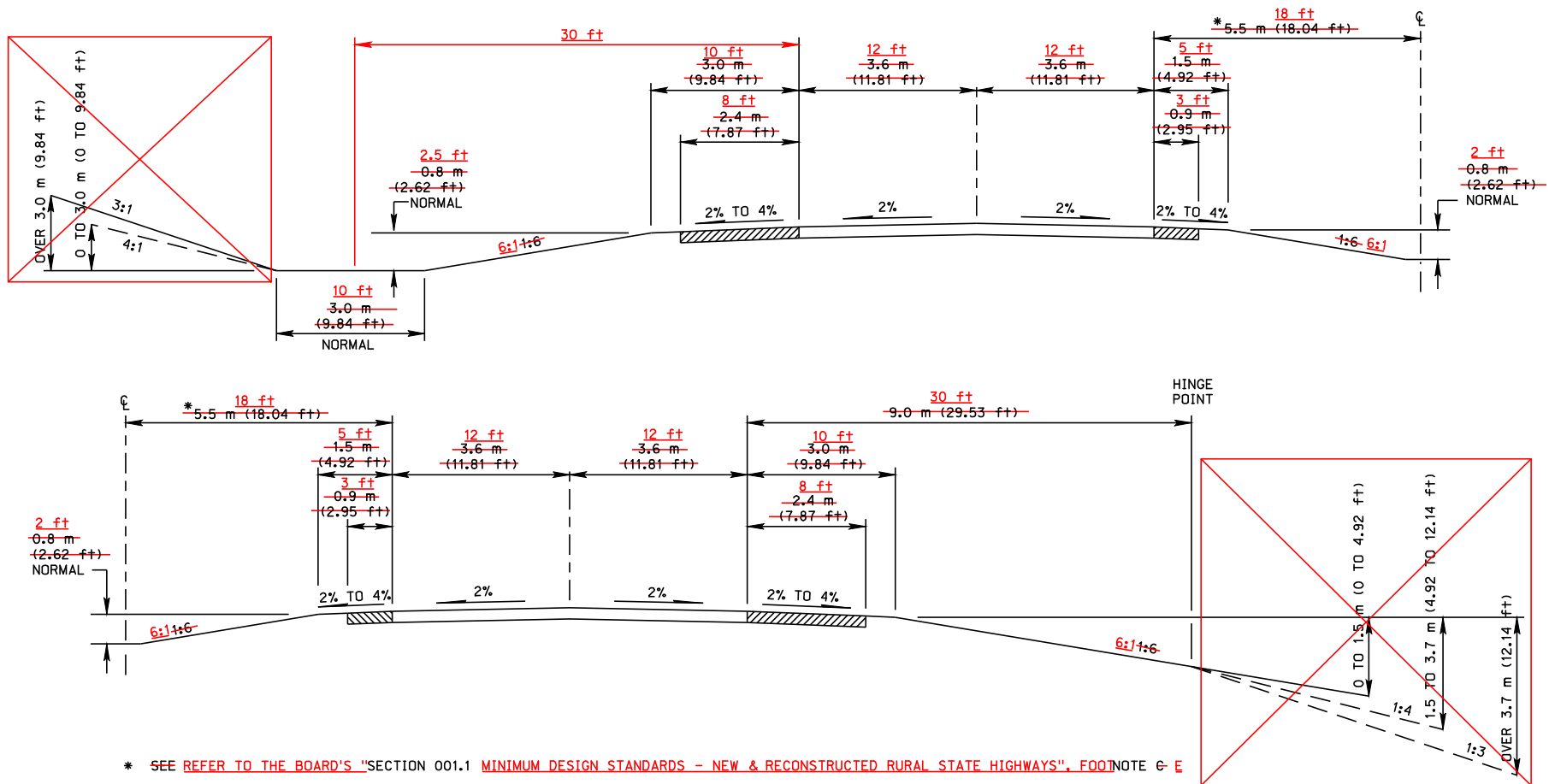
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DR 1 (TANGENT)

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

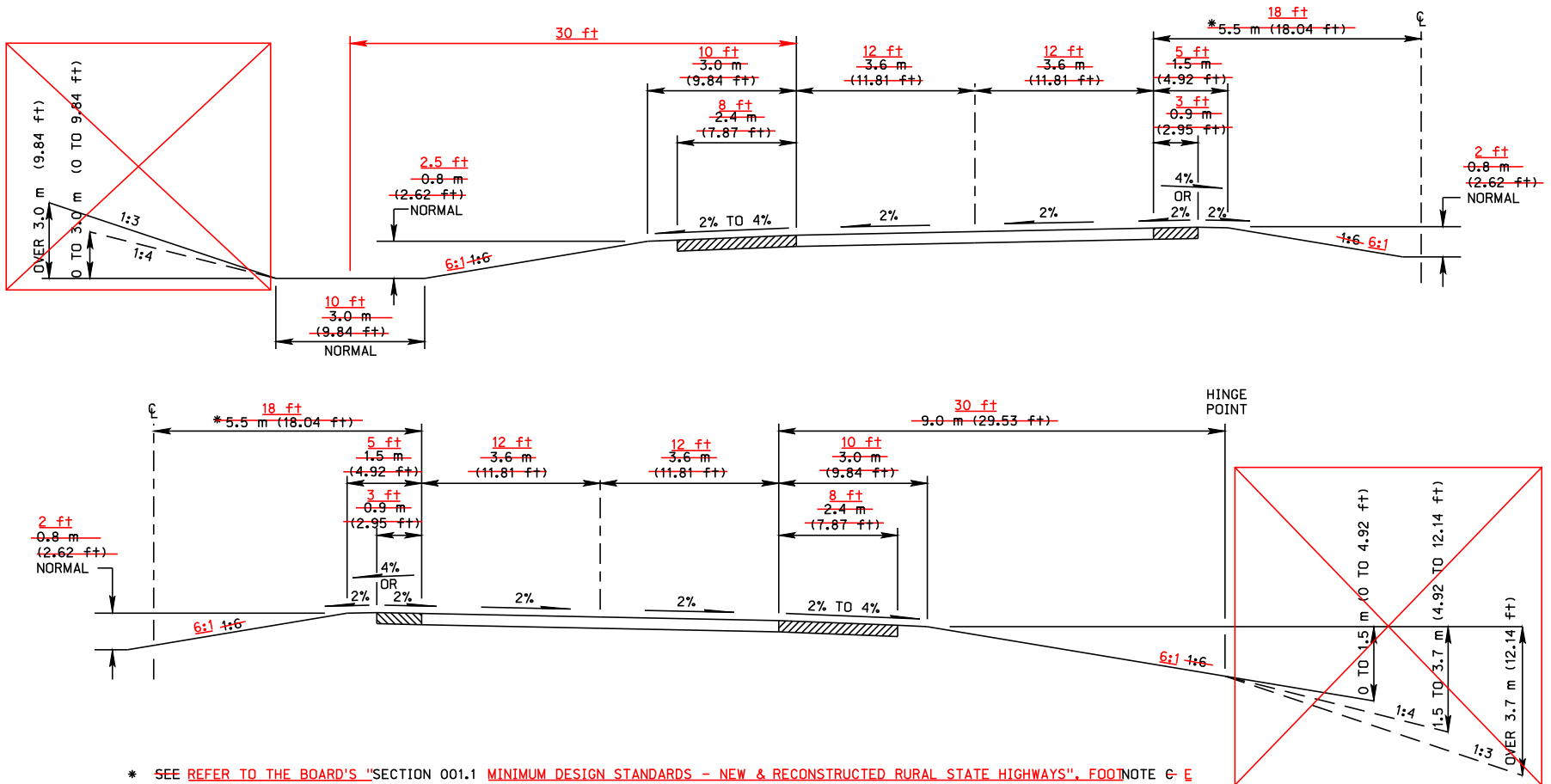
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DR 2 (CROWNED)

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

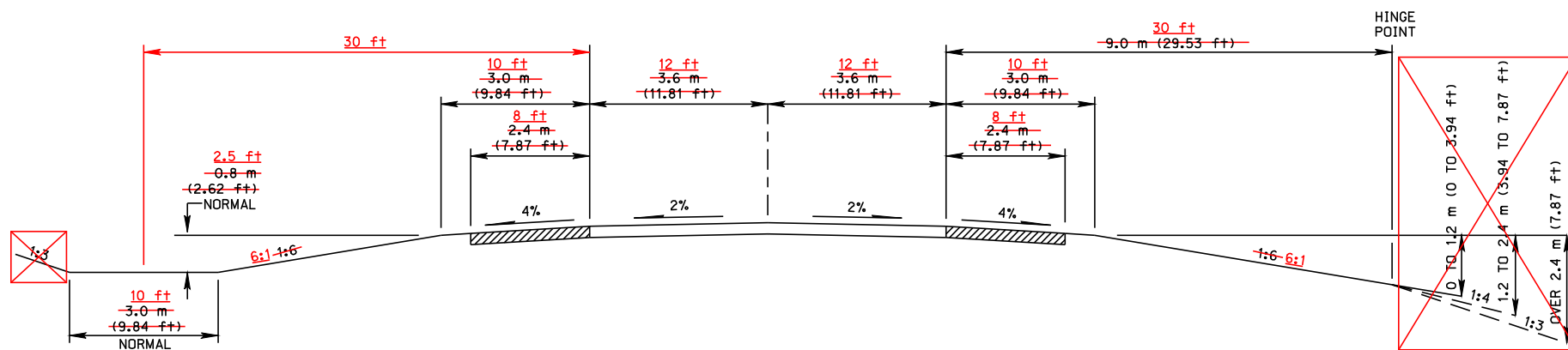
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DR 2 (TANGENT)

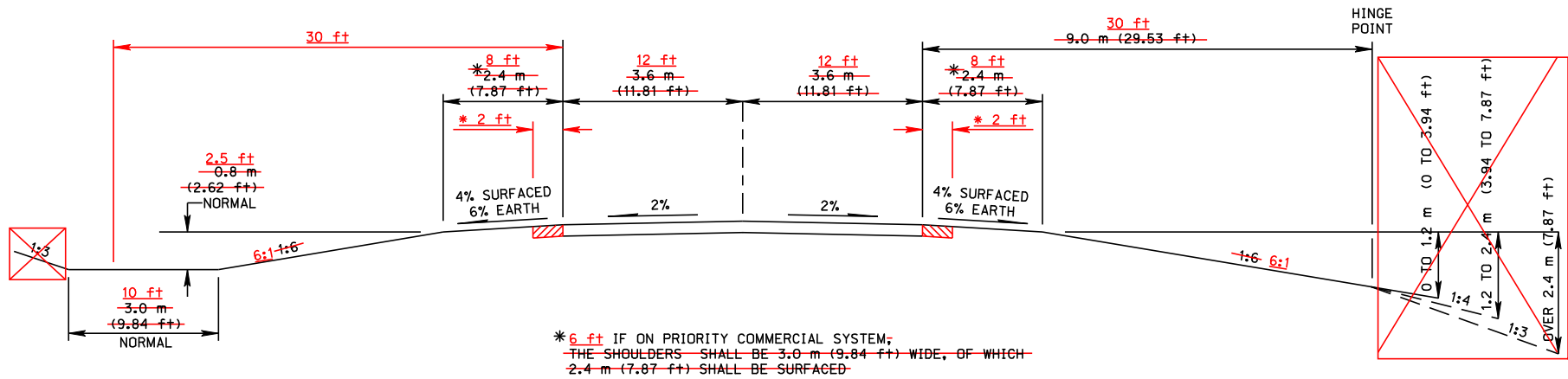
TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

001.08 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR3



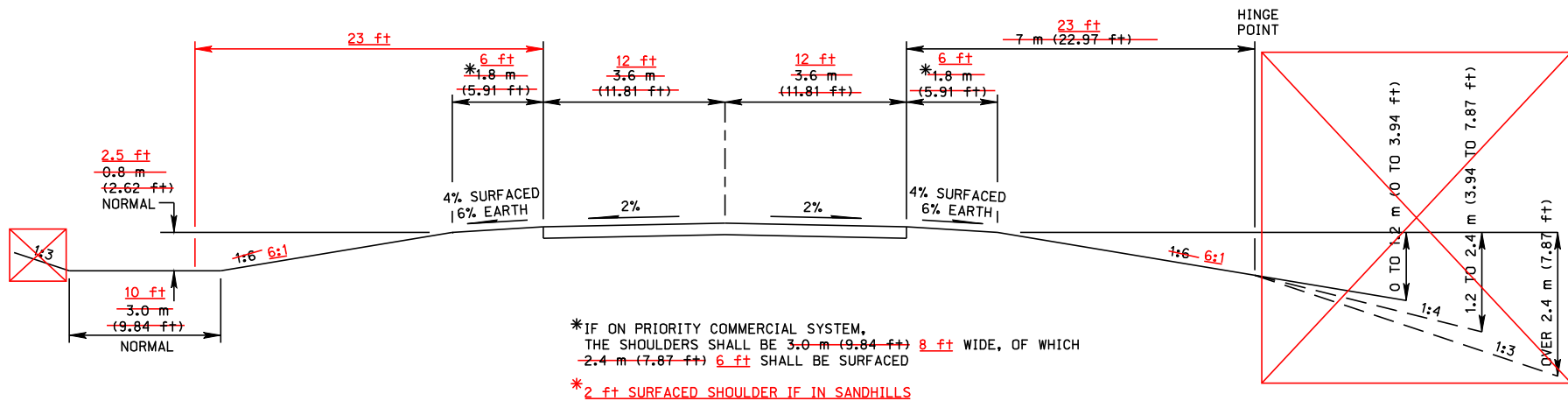
TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

001.09 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR4



TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

001.10 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR5



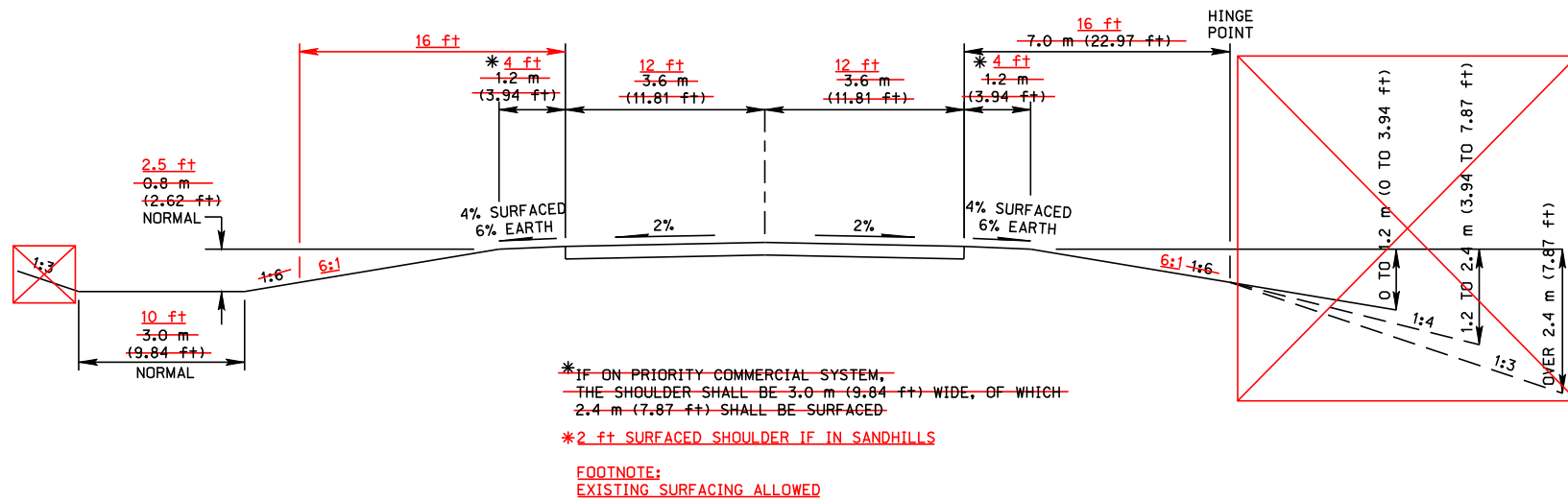
*IF ON PRIORITY COMMERCIAL SYSTEM,
THE SHOULDERS SHALL BE 3.0 m (9.84 ft) 8 ft WIDE, OF WHICH
2.4 m (7.87 ft) 6 ft SHALL BE SURFACED

*2 ft SURFACED SHOULDER IF IN SANDHILLS

FOOTNOTE:
EXISTING SURFACING ALLOWED

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)

001.11 - TYPICAL CROSS SECTION OF IMPROVEMENT FOR NEW AND RECONSTRUCTED RURAL STATE HIGHWAYS: DR6



Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.12 MINIMUM DESIGN STANDARDS — NEW AND RECONSTRUCTED MUNICIPAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(2) (1) State Functional Classification	(4) (2) National Functional Classification	(3) Design Speed km/h (mph)	Horizontal Curve Min. Radius m (Max. Deg.)	Terrain	(4) Maximum Grade Percent	(5) (4) Number of Lanes	Median Width	Type of Roadway Section	Lane Width m (ft)	Shoulder Width	Width of Shoulder Surfacing	(6) (5) Lateral Obstacle Clearance	
												Posted Speed Below 50 mph (80 km/h) m (ft)	Posted Speed 50 mph (80 km/h) and Above m (ft)
Interstate	Interstate	80 (40-71) 50 mph	250 758' A (6.00)	Level Rolling	3 4% C 5% C	4	Variable 10'	N/A	3.6 (11.81) 12'	6' Lt., 12' Rt.	4' Lt., 10' Rt.	N/A	6 30'
Expressway	Arterial	50 mph	758' A	Level Rolling	4% C 5% C	4	10'		12'	5' Lt., 10' Rt.	3' Lt. 8' Rt.	N/A	30'
Expressway or Major Arterial	Arterial	60 (37-28) 30 mph	135 250' B (12.04)	Level Rolling	5-7 8% C 9% C	2	Variable 0	Curbed Non-Curbed	3.6 (11.81)A 3.6 (11.81)	11' E B E C E	N/A E G E	D 4.5 (14.76) 15' G	D E G E G
Major Arterial	Collector	60 (37-28) 30 mph	135 250' B (12.04)	Level Rolling	7-11 9% D 11% D	2	0	Curbed Non-Curbed	3.6 (11.81)A 3.6 (11.81)	11' E B E C E	N/A E G E	D 4.5 (14.76) 15' G	D E G E G

(2) (1) Refer to NDOR "Nebraska State Highway Functional Classification" Map."

(4) (2) Refer to NDOR "Nebraska National Highway Functional Classification" Map."

(3) The design speed should be equal to or greater than the anticipated posted speed limit.

(4) The upper limits of these values should only be used in unusual circumstances. The lower limits of these values should be regarded as desirable.

(5) (4) The actual number of lanes for design shall be based on a capacity analysis using design year traffic and the selected level of service to be obtained. "Design Year" shall be year of initial construction plus 20 years.

(6) (5) This area, measured from the edge of the through driving lane, shall have 6:1 side slopes 4:6 or flatter which may have crashworthy or break-away obstacles and shall be free of non-shielded obstacles except: (a) Traffic signals, signal poles, railroad signals, railroad tracks, bridge rails, and non-recoverable slopes behind guardrail; (b) Other obstacles including, but not limited to, ditches, recoverable slopes, driveways, intersections, bike/pedestrian paths, earth dikes, sloping curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, safety-treated culverts with flared end sections, erosion control devices, trash cans, parking meters/facilities, fire hydrants, handrails, concrete barrier, barrier curb, roadway lighting, mailboxes, and traffic control devices; if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system; (c) (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost-benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

A Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" e max = 8%.

B Based on the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets," Exhibit 3-16. Minimum Radii and Superelevation for Low-Speed Urban Streets e max = 4%.

C Maximum grade may be one percent steeper for tangent lengths less than 500 ft.

D Maximum grade may be two percent steeper for tangent lengths less than 500 ft.

E These values do not include width of curb or curb offset.

B Minimum 1.8 m (5.91 ft), measured from back of curb.

G E In accordance with Curbed: None. Non-Curbed: Refer to the Board's of Public Roads Classifications and Standards "Section 001.01 Minimum Design Standards - New and Reconstructed Rural State Highways."

D G Curbed: 6 ft 2 m (6.56 ft) measured from the edge of the through driving lane or 2 ft 0.6 m (1.97 ft) measured from the back of curb, whichever is the greater distance from the edge of the through driving lane.

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.13 MINIMUM DESIGN STANDARDS — NEW AND RECONSTRUCTED BRIDGES ON MUNICIPAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

(2) (1) State Functional Classification	(4) (2) National Functional Classification	Type of Roadway Section	NEW BRIDGES			(3) & (4) RECONSTRUCTED BRIDGES			(4) (3) BRIDGES TO REMAIN IN PLACE	
			Roadway Width m (ft)	Design Loading	Vertical Clearance m (ft)	Roadway Width m (ft)	Design Loading	Vertical Clearance m (ft)	Roadway Width m (ft)	Vertical Clearance m (ft)
Interstate	Interstate	N/A	12.6 (41.34) <u>42'</u>	MS18 (HS20) <u>HL93</u> G	5 (16.40) <u>16'</u>	12.6 (41.34) <u>42'</u>	HL93	4.9 (16.08) <u>16'</u>	11.4 (37.40) <u>38'</u>	4.9 (16.08) <u>16'</u>
<u>Expressway</u>	<u>Arterial</u>	<u>N/A</u>	<u>39'</u>	<u>HL93</u>	<u>16'</u>	<u>39'</u>	<u>HL93</u>	<u>16'</u>	<u>28'</u>	<u>16'</u>
Expressway or Major Arterial	Arterial	Curbed	A	MS18 (HS20)	5 (16.40)	A	<u>HL93</u>	4.4 (14.44) <u>14.5'</u>	6 (19.60) <u>23'</u> D <u>A</u>	4.4 (14.44) <u>14.5'</u>
		Non-Curbed	B	MS18 (HS20) <u>HL93</u>	5 (16.40) <u>16'</u>	B		4.4 (14.44) <u>14.5'</u>	8 (27.56) <u>28'</u> E	
Major Arterial	Collector	Curbed	A	MS18 (HS20) <u>HL93</u>	4.5 (14.76) <u>15'</u>	A	<u>HL93</u>	4.4 (14.44) <u>14.5'</u>	6 (19.60) <u>23'</u> D <u>A</u>	4.4 (14.44) <u>14.5'</u>
		Non-Curbed	B			B			8 (27.56) <u>28'</u> E	

(2) (1) Refer to NDOR “Nebraska State Highway Functional Classification” Map.”

(4) (2) Refer to NDOR “Nebraska National Highway Functional Classification” Map.”

(3) ~~Reconstructed bridges shall mean existing structures to be widened or remodeled.~~

(4) (3) Structural Capacity - A bridge can remain in place if the operating rating capacity can safely service the system for an additional 20 years of service life (i.e. bridge does not require load posting).

A The clear roadway width of bridge shall be 1 ft 0.3 m (0.98 ft) wider than the gutter line to gutter line width of the approach roadway. The gutter line is defined as being 1 ft 0.3 m (0.98 ft) inside the back of the approach roadway curb.

B ~~Bridge roadway width to be same as that required by~~ Refer to the Board’s “Section 001.02 Minimum Design Standards — ~~New and Reconstructed~~ Bridges on Rural State Highways.”

G ~~MS18 (HS20) or Alternate Military Loading.~~

D ~~The clear roadway width of bridge shall not be less than the width of the driving lanes on the approach roadway.~~

E ~~12 m (39.37 ft) if on Priority Commercial System. Refer to NDOR “Nebraska Interstate and Priority Commercial Systems Map.”~~

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.14 MINIMUM DESIGN STANDARDS — RESURFACING, RESTORATION AND REHABILITATION (3R) PROJECTS ON ~~NON-INTERSTATE~~ MUNICIPAL STATE HIGHWAYS

Any relaxation of these standards must have written approval by the Board.

For metric units, use a soft conversion of the English unit.

Interstate — The standards used for horizontal alignment, vertical alignment, and widths of median, traveled way, and shoulders for projects may be the AASHTO interstate standards that were in effect at the time of the latest new and reconstructed project on the section of Interstate.

(1) Design Year Traffic	Grade	(2) Horizontal Curve Radius	Number of Lanes	Type of Roadway Section	Lane Width m (ft)		Shoulder Width m (ft)		Width of Shoulder Surfacing m (ft)		(3) Fixed Obstacle Clearance		Bridges to Remain in-Place Roadway Width	
											Posted Speed Below 50 mph (80 km/h)	Posted Speed 50 mph (80 km/h) and Above		
											m (ft)	m (ft)		
3000 4,000	ADT & Over	Existing	Existing	2	Curbed	3 (9.84)	11' A	N/A	N/A	0-0 (2.05)	3'	0-0 (2.05)	3'	G
					Non-Curbed	3.6 (11.81)	11'	2.4 (7.87)	8' A B	1.8 (5.91)	6' A B	3 (9.84)	10'	B C
1700—2000 2,000 - 3,999	ADT	Existing	Existing	2	Curbed	3 (9.84)	11' A	N/A	N/A	0-0 (2.05)	3'	0-0 (2.05)	3'	G
					Non-Curbed	3.6 (11.81)	11'	1.5 (4.92)	5'	Existing	A B	3 (9.84)	10'	B C
Under 1700 2,000	ADT	Existing	Existing	2	Curbed	3 (9.84)	11' A	N/A	N/A	0-0 (2.05)	3'	0-0 (2.05)	3'	G
					Non-Curbed	3.3 (10.83)	11'	0.6 (1.97)	2'	Existing		3 (9.84)	10'	B C

(1) "Design Year" shall be year of initial construction plus ~~20 years~~ the expected life of the surfacing up to 20 years.

(2) Horizontal curves not providing posted speed as stated in the 2004 edition of AASHTO "A Policy on Geometric Design of Highways and Streets." may have advisory curve and speed reduction signs. Existing right angle turns in the central business district or at stop sign or signal controlled intersections are acceptable.

(3) This area, measured from the edge of the through driving lane, may have crashworthy or break-away obstacles and will shall be free of ~~non-shielded~~ obstacles except: (a) Traffic ~~signals, signal poles,~~ railroad signals, railroad tracks, bridge rails, and ~~non-recoverable slopes behind guardrail;~~ (b) Other obstacles including, but not limited to, ditches, side slopes, ~~recoverable slopes,~~ driveways, intersections, bike/pedestrian paths, earth dikes, parallel drainage culverts, sloping curbs, raised islands, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, ~~safety-treated~~ with flared end sections, erosion control devices, trash cans, parking meters/facilities, fire hydrants, handrails, concrete barrier, barrier curb, roadway lighting, mailboxes, and traffic control devices; ~~if the NDOR, in its sole discretion, has determined that such obstacles are acceptable and are necessary for the operation and use of the highway system;~~ (c) (b) Other obstacles if the NDOR, in its sole discretion, determines based upon an accident review and a cost benefit Roadside Safety Analysis Program (RSAP) review or a comparable AASHTO approved economic analysis, that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.

A These values do not include width of curb or curb offset.

A B For If a 4-lane divided facility exists, the minimum inside shoulder width is 3 ft 0.9 m (2.95 ft) with 2 ft 0.6 m (1.97 ft) surfaced.

B C Refer to the Board's "Section 001.03 Minimum Design Standards – Resurfacing, Restoration and Rehabilitation (3R) Projects on ~~Non-Interstate~~ Rural State Highways."

G Bridges to remain in place shall be in accordance with the Board's "Section 001.13 New and Reconstructed Bridges on Municipal State Highways."

**MINIMUM DESIGN STANDARDS - PART TWO
LOCAL ROADS AND STREETS**

001.15 MINIMUM DESIGN STANDARDS — MUNICIPAL STREETS ⁽¹⁾

(2) State Functional Classification	(3) Design Year Traffic	(4) Design Speed (mph)	(5) Maximum Horizontal Curve (Degree)	Maximum Grade (Percent)	(6) Number of Lanes	(7) Lane Width (Feet)	Median Width (Feet)	Non-Curbed Section Shoulder Width (Feet)	(8) Fixed Obstacle Clearance (Feet)	Lighting	New and Reconstructed Bridge Design Loading
Other Arterial	—	30	15	8	2	11	0 - As Required	8	—	Full	HS-20 HL93
Collector	—	25	20	10	2	11	None	6	—	Desirable	HS-20 HL93
Local	—	25	30★	10	2	11	None	6	—	Desirable	HS-20 HL93

(1) The 2001 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria.

(2) Refer to NDOR "State Functional Classification Maps."

(3) "Design Year" shall be year of initial construction plus 20 years.

(4) The design speed should be equal to or greater than the anticipated posted speed limit. Stopping sight distance is a critical component of design speed.

(5) 0.06 feet per foot maximum superelevation rate. The superelevation rate should match the design speed.

(6) The actual number of lanes for design shall be based on a capacity analysis using design year traffic and the selected level of service to be obtained.

(7) Lane width shall not include width of curb or curb offset.

(8) Minimum fixed obstacle clearance for a curbed section shall be 2 feet as measured from the back of the curb, or for a non-curbed section shall be 8 feet as measured from the edge of the through driving lane. This area shall be free of obstacles except: (a) Traffic signals, railroad signals and railroad tracks; (b) Other obstacles including, but not limited to: ditches, slopes, driveways, intersections, earth dikes, curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts, bridges, roadway lighting, and traffic control devices if the municipality, through an engineering study, has determined that such obstacles are acceptable and are necessary for the operation and use of the street system; (c) Other obstacles if the municipality, through an engineering study and based upon a cost benefit analysis, has determined that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment. Fixed obstacle clearance for a non-curbed section may be reduced further for a turn-out lane, provided a minimum clearance of 2 feet is maintained from any paved surface.

★ Local street radii can be reduced to 100 feet if compatible with overall development and a design speed study.

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

001.16 MINIMUM DESIGN STANDARDS — RURAL ROADS ⁽¹⁾

(2) Roadway Classification	Design Number	(3) Current Year ADT	(4) Design Speed (mph)	(5) Maximum Horizontal Curve (Degree)	(6) Maximum Grade (Percent)	(7) Number of Lanes	(8) Lane Width (Feet)	Shoulder Width (Feet)	(9) Fixed Obstacle Clearance (Feet)	(10) New and Reconstructed Bridges		(11) Bridges to Remain in Place (100 Feet and Under in Length)	New and Reconstructed Bridge Design Loading	(12) Surfacing Type
										(100 Feet and Under in Length)	(Over 100 Feet in Length)			
Other Arterial	ROA1	401 - 750	50	7.5	7	2	12	6	12	30'	28'+-+	24'	HS-20 HL93	Aggregate or Paved
	ROA2	251 - 400	50	7.5	7	2	11	4	10	30'	28'	22'	HS-20 HL93	Aggregate or Paved
	ROA3	51 - 250	50	7.5	7	2	10	4	10	28'	28'	20'	HS-20 HL93	Aggregate or Paved
	ROA4	0 - 50	40	8.0	8	2	10	3	8	26'	26'	20'	HS-15+ HL93	Aggregate★
Collector	RC1	251- 400	50	7.5	7	2	11	4	10	30'	28'	22'	HS-20 HL93	Aggregate or Paved
	RC2	51- 250	50	7.5	7	2	10	4	10	28'	28'	20'	HS-15 HL93	Aggregate or Paved
	RC3	0- 50	40	10.0	9	2	10	3	5	24'	24'	20'	HS-15+ HL93	Aggregate★
Local	RL1	251- 400	50	7.5	7	2	11	4	8	26'	26'	22'	HS-20 HL93	Aggregate or Paved
	RL2	51- 250	50	7.5	7	2	10	4	8	24'	24'	20'	HS-15 HL93	Aggregate or Paved
	RL3	0- 50	30	23.0	10	2	10	3	5	20'+	20'+	20'	HS-15+ HL93	Aggregate★
Scenic-Recreation	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★
Minimum Maintenance	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★	★★★

- (1) The Typical Cross Sections (sections 001.18 through 001.22) in these regulations and the 2001 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria. Municipal Streets Design Standards (Sec. 001.15, above) may be used in residential and commercial areas lying outside municipal boundaries. This may be particularly appropriate for Sanitary and Improvement Districts and for developed areas under municipal zoning jurisdiction.
 - (2) Refer to NDOR "State Functional Classification Maps."
 - (3) "Current year" shall mean year of initial construction. Minimum design criteria for ADT volumes over 400 in the "Collector" and "Local" classifications shall conform to the minimum standards set forth in the "Other Arterial" classification. Minimum design criteria for ADT volumes over 750 in the "Other Arterial" classification shall conform to the minimum standards set forth in AASHTO "A Policy on Geometric Design of Highways and Streets."
 - (4) The design speed should be equal to or greater than the anticipated posted speed limit. Stopping sight distance is a critical component of design speed. New or reconstructed roads that are designed for a speed less than the statutory speed limit require an engineering and traffic investigation to determine the appropriate speed limit. Reference 60-6,190 Neb.Rev.Stat.
 - (5) 0.08 feet per foot maximum superelevation rate. The superelevation rate should match the design speed.
 - (6) Maximum grades may be exceeded by 2 percent for tangent distance of up to 500 feet in rough terrain.
 - (7) The actual number of lanes for design shall be based on a capacity analysis using design year traffic and the selected level of service to be obtained.
 - (8) Lane width shall not include width of curb or curb offset. See Typical Cross Sections (001.18 through 001.22) for cross slope.
 - (9) Minimum fixed obstacle clearance for a curbed section shall be 2 feet as measured from the back of the curb. Minimum fixed obstacle clearance for a non-curbed section shall be measured from the edge of the through driving lane. This area shall be free of obstacles except: (a) Traffic signals, railroad signals and railroad tracks; (b) Other obstacles including, but not limited to: ditches, slopes, driveways, intersections, earth dikes, curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts, bridges, roadway lighting, and traffic control devices if the county, through an engineering study, has determined that such obstacles are acceptable and are necessary for the operation and use of the road system; (c) Other obstacles if the county, through an engineering study and based upon a cost benefit analysis, has determined that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.
 - (10) Low water stream crossings may be constructed on very low volume (0 - 50 ADT) county roads functionally classified as Local or Minimum Maintenance, provided a relaxation of standards has been granted by the Board. New low water stream crossings shall not be constructed on county roads functionally classified as Other Arterial and Collector. All proposed construction or reconstruction shall be submitted to the Board for review in accordance with the rules and regulations for relaxation of standards.
 - (11) Existing bridges over 100 feet must be evaluated in accordance with AASHTO guidelines to determine the suitability of leaving them in place.
 - (12) A road graded to meet or exceed ROA1, ROA2, ROA3, RC1, RC2, RL1 or RL2 Minimum Design Standards in effect between September 2, 1970 and January 1, 2003 may be paved without being graded to current minimum design standards.
- ★ The paving of roads built to ROA4, RC3 and RL3 Minimum Design Standards, except for "Sandhills" soils, is prohibited. Such roads (0 - 50) ADT in "Sandhills" soils may require paving because of the light, granular nature of the soils involved. It shall also be permissible to pave one 12-foot lane on roads built to RL3 Minimum Design Standards in "Sandhills" soils.
- ★★ See Section 001.17 of these regulations for standards applicable to the functional classification category "Scenic-Recreation."
- ★★★ All proposed construction or reconstruction on Minimum Maintenance Roads shall be submitted to the Board for review in accordance with the rules and regulations for relaxation of standards. There are no set design standards for Minimum Maintenance Roads.
- + 24 feet desirable
- +-+ 30 feet desirable
- +++ HS-20 desirable

Title 428 — BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS

Chapter 2 — Procedures for Standards (Continued)

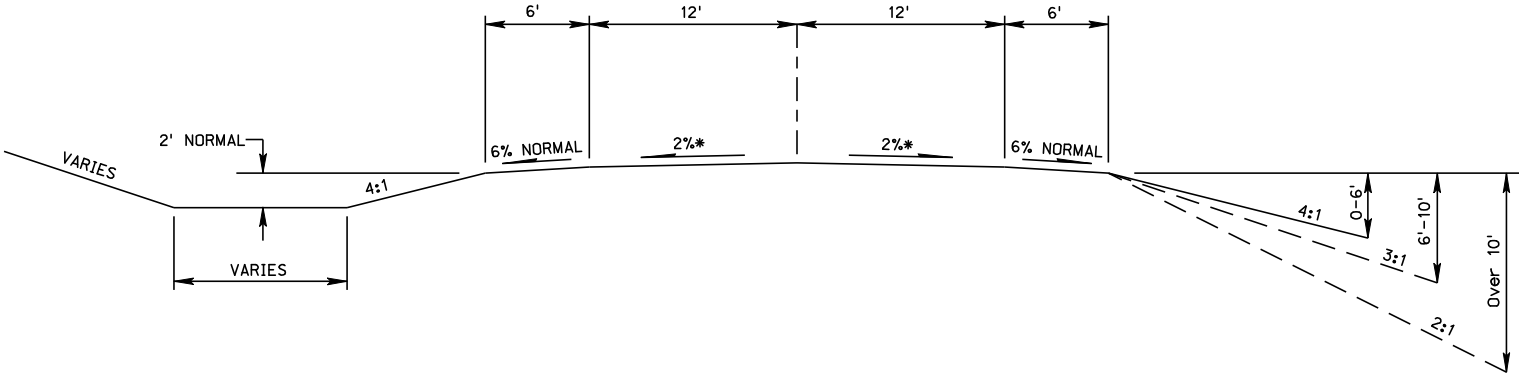
001.17 MINIMUM DESIGN STANDARDS — SCENIC-RECREATION — RURAL ROADS ⁽¹⁾

Roadway Sub-Classification	Design Number	(2) Current Year ADT	(3) Design Speed (mph)	(4) Maximum Horizontal Curve (Degree)	(5) Maximum Grade (Percent)	(6) Number of Lanes	(7) Lane Width (Feet)	Shoulder Width (Feet)	(8) Fixed Obstacle Clearance (Feet)	(9) New and Reconstructed Bridges		(10) Bridges to Remain in Place (100 Feet and Under in Length) Roadway Width	New and Reconstructed Bridge Design Loading	(11) Surfacing Type
										(100 Feet and Under in Length) Roadway Width	(Over 100 Feet in Length) Roadway Width			
Other Arterial	ROA2	401 - 750	50	7.5	7	2	11	4	10	30'	28'	22'	HS-20 HL93	Aggregate or Paved
	ROA3	251 - 400	50	7.5	7	2	10	4	10	28'	28'	20'	HS-20 HL93	Aggregate or Paved
	ROA4	0 - 250	40	8.0	8	2	10	3	9	26'	26'	20'	HS-15+± HL93	Aggregate★
Collector	RC2	251 - 400	50	7.5	7	2	10	4	10	28'	28'	20'	HS-15+± HL93	Aggregate or Paved
	RC3	0 - 250	40	10.0	9	2	10	3	5	24'	24'	20'	HS-15+± HL93	Aggregate★
Local	RL2	251 - 400	50	7.5	7	2	10	4	6	24'	24'	20'	HS-15+± HL93	Aggregate or Paved
	RL3	0 - 250	30	23.0	10	2	10	3	5	20'+	20'+	20'	HS-15+± HL93	Aggregate★
Internal	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★	★★

- (1) Refer to NDOR "State Functional Classification Maps." Effort shall be made to preserve the natural environment to the extent possible without compromising the safety of those using the facility at the speed limits that apply. The Typical Cross Sections (Sections 001.19 through 001.22) in these regulations and the 2001 edition of AASHTO "A Policy on Geometric Design of Highways and Streets" should be used for other design criteria.
- (2) "Current year" shall mean year of initial construction. Minimum design criteria for ADT volumes over 400 in the "Collector" and "Local" classifications shall conform to the minimum standards set forth in the "Other Arterial" classification.
Minimum design criteria for ADT volumes over 750 in the "Other Arterial" classification shall conform to the minimum standards set forth in AASHTO "A Policy on Geometric Design of Highways and Streets."
- (3) The design speed should be equal to or greater than the anticipated posted speed limit. Stopping sight distance is a critical component of design speed. New or reconstructed roads that are designed for a speed less than the statutory speed limit require an engineering and traffic investigation to determine the appropriate speed limit. Reference 60-6,190 Neb.Rev.Stat.
- (4) 0.08 feet per foot maximum superelevation rate. The superelevation rate should match the design speed.
- (5) Maximum grades may be exceeded by 2 percent for tangent distance of up to 500 feet in rough terrain.
- (6) The actual number of lanes for design shall be based on a capacity analysis using design year traffic and the selected level of service to be obtained.
- (7) Lane width shall not include width of curb or curb offset. See Typical Cross Sections (001.19 through 001.22) for cross slope.
- (8) Minimum fixed obstacle clearance for a curbed section shall be 2 feet as measured from the back of the curb. Minimum fixed obstacle clearance for a non-curbed section shall be measured from the edge of the through driving lane. This area shall be free of obstacles except: (a) Traffic signals, railroad signals and railroad tracks; (b) Other obstacles including, but not limited to: ditches, slopes, driveways, intersections, earth dikes, curbs, guardrails, median barriers, crash cushions, drainage inlets, drainage flumes, culverts, bridges, roadway lighting, and traffic control devices if the county, through an engineering study, has determined that such obstacles are acceptable and are necessary for the operation and use of the road system; (c) Other obstacles if the county, through an engineering study and based upon a cost benefit analysis, determines that the cost to remove or treat such obstacle exceeds the benefits from such removal or treatment.
- (9) Low water stream crossings may be constructed on very low volume (0 - 50 ADT) county roads functionally classified as Local or Minimum Maintenance, provided a relaxation of standards has been granted by the Board. New low water stream crossings shall not be constructed on county roads functionally classified as Other Arterial and Collector. All proposed construction or reconstruction shall be submitted to the Board for review in accordance with the rules and regulations for relaxation of standards.
- (10) Existing bridges over 100 feet must be evaluated in accordance with AASHTO guidelines to determine the suitability of leaving them in place.
- (11) A road graded to meet or exceed ROA1, ROA2, ROA3, RC1, RC2, RL1 or RL2 Minimum Design Standards in effect between September 2, 1970 and January 1, 1993 may be paved without being graded to current minimum design standards.

- ★ The paving of roads built to ROA4, RC3 and RL3 Minimum Design Standards, except for "Sandhills" soils, is prohibited. Such roads (0 - 50 ADT) in "Sandhills" soils may require paving because of the light, granular nature of the soils involved. It shall be permissible to pave one 12-foot lane on roads built to RL3 Minimum Design Standards in "Sandhills" soils.
- ★★ Minimum design standards within the recreational area shall be consistent with the established speed limits, the topography and use of the facility. Design may be to either municipal or rural standards depending on terrain conditions. Minimum design speed permissible 20 mph.
- + 24' desirable
- +± ~~HS-20~~ desirable

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures For Standards (Continued)
001.18 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS

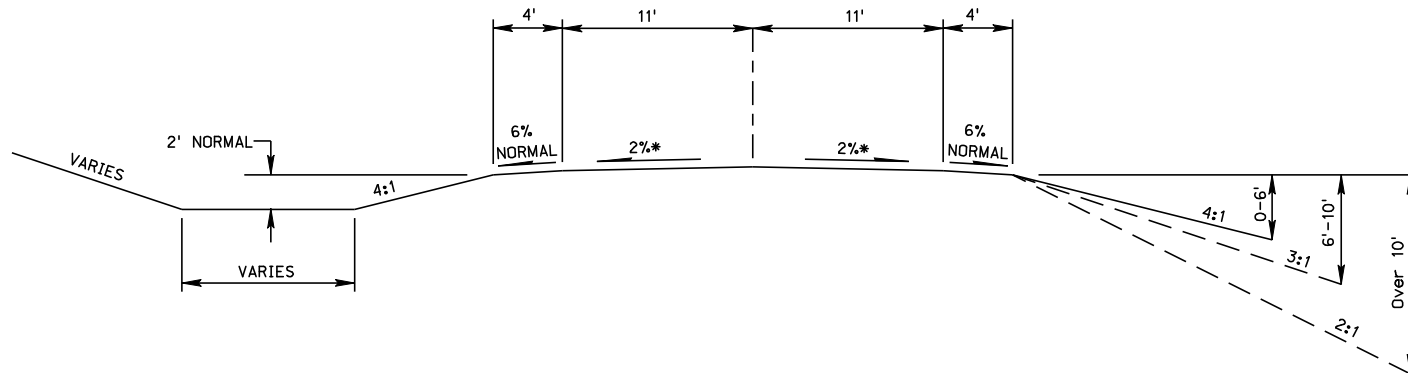


* Unpaved roads: 2% minimum; consult AASHTO guidelines for appropriate cross slope.

ROA1		
OTHER ARTERIAL	COLLECTOR	LOCAL
401 - 750 ADT	OVER 400 ADT	OVER 400 ADT

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
 CHAPTER 2 -- Procedures For Standards (Continued)

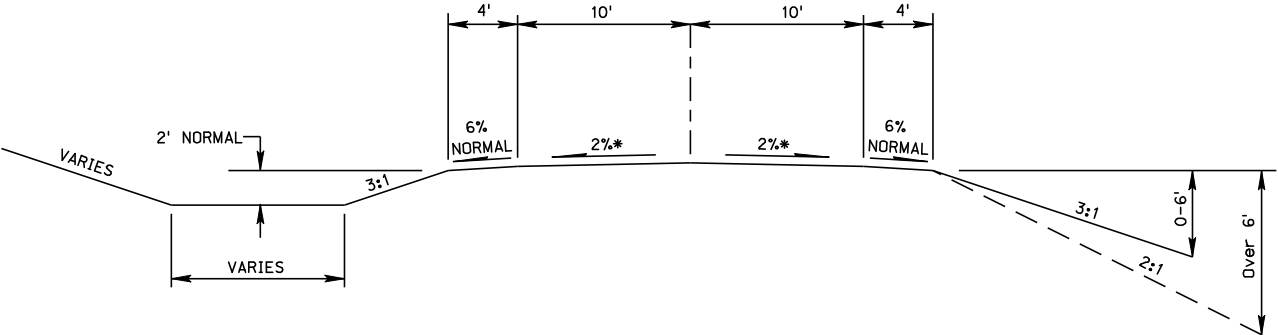
001.19 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



* Unpaved roads: 2% minimum; consult AASHTO guidelines for appropriate cross slope.

ROA2	RC1	RL1
OTHER ARTERIAL	COLLECTOR	LOCAL
251 - 400 ADT	251 - 400 ADT	251 - 400 ADT
(401 - 750 ADT FOR SCENIC-RECREATION)		

001.20 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS

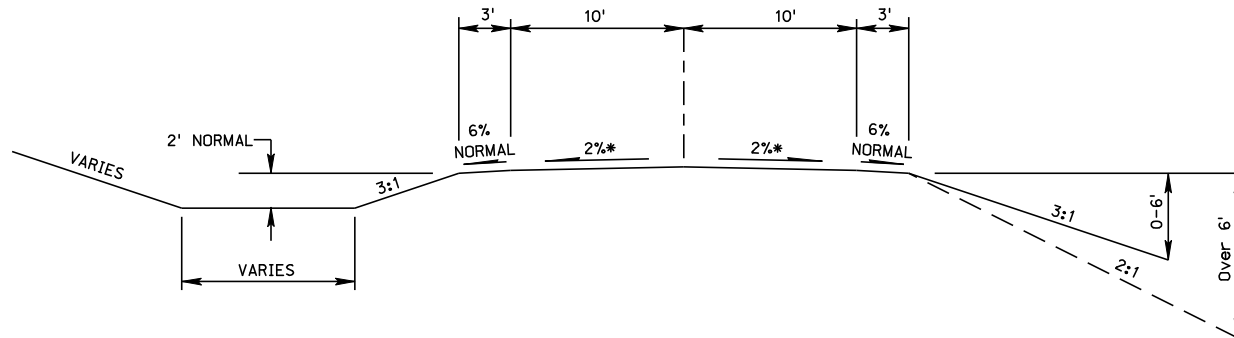


* Unpaved roads: 2% minimum; consult AASHTO guidelines for appropriate cross slope.

	ROA3	RC2	RL2
	OTHER ARTERIAL	COLLECTOR	LOCAL
	51 - 250 ADT	51 - 250 ADT	51 - 250 ADT
FOR SCENIC-RECREATION:	251 - 400 ADT	251 - 400 ADT	251 - 400 ADT

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
CHAPTER 2 -- Procedures for Standards (Continued)

001.21 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



* Unpaved roads: 2% minimum; consult AASHTO guidelines For appropriate cross slope.

ROA4
OTHER ARTERIAL
0 - 50 ADT

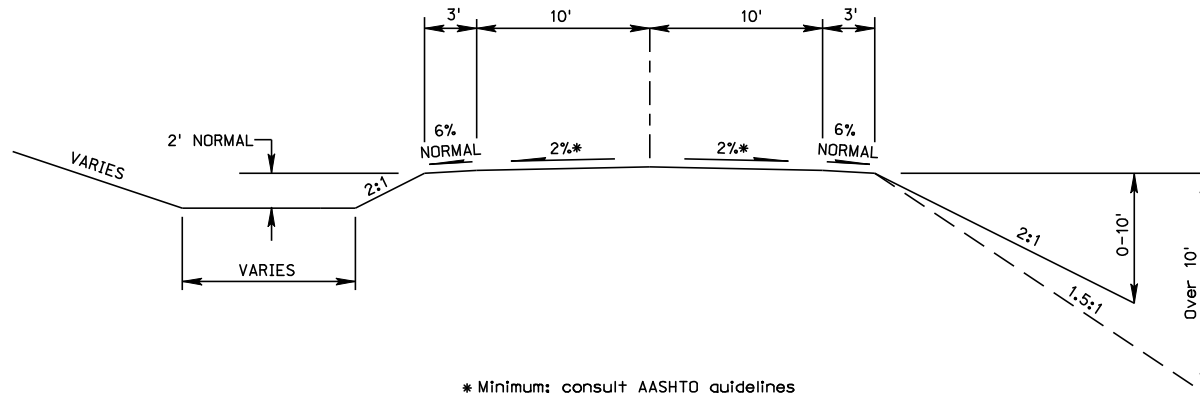
RC3
COLLECTOR
0 - 50 ADT

FOR SCENIC-RECREATION: 0 - 250 ADT

0 - 250 ADT

TITLE 428 -- BOARD OF PUBLIC ROADS CLASSIFICATIONS AND STANDARDS
 CHAPTER 2 -- Procedures For Standards (Continued)

001.22 - TYPICAL CROSS SECTIONS OF IMPROVEMENT FOR RURAL ROADS



* Minimum; consult AASHTO guidelines
 for appropriate cross slope.

RL3
 LOCAL
 0 - 50 ADT

FOR SCENIC-RECREATION: 0 - 250 ADT